HOUSING IN METROPOLITAN PHOENIX

August 2000

Prepared for the Morrison Institute for Public Policy
School of Public Affairs
College of Public Programs
Arizona State University

As part of the
Brookings Growth Case Study

Tom R. Rex
Center for Business Research
L. William Seidman Research Institute
College of Business
Arizona State University
Box 874011
Tempe, Arizona 85287-4011

(480) 965-3961
FAX: (480) 965-5458
EMAIL: tom.rex@asu.edu

TABLE OF CONTENTS

List of Tables

List of Maps

Note: The maps included in this report were produced by the Information Technology Research Support Lab – GIS Services, Arizona State University.

HOUSING IN METROPOLITAN PHOENIX: SUMMARY

The age of housing in the Phoenix metropolitan area reflects the mostly steady outward spread of development. Large differences exist across the area in other housing measures. Many of these differences are closely related to geographic variations in household income and in the type of housing.

As in the rest of the country, housing affordability in the Phoenix metropolitan area fell substantially in the 1970s. During the 1980s, the change in affordability varied by situation. Affordability rose for the median-income household, especially for homeownership. For those at the low end of the income spectrum, affordability of rental units improved slightly, but affordability of owned units worsened. Data for the 1990s are limited; the affordability of owned units rose for the median-income household, which could afford the median-priced home in 1998.

An inadequate supply of very low-cost housing existed in the Phoenix metropolitan area in 1990. Even if low-income households were perfectly matched to low-income housing that they could afford, a little less than 3 percent of all households (about 23,000) could not have found affordable housing. The inadequacy expanded in the 1980s.

The percentage of households reporting an unaffordable housing payment was much greater. Considering only low-income households who spent more than 30 percent of their income on housing, about 21 percent of all households had a housing problem related to affordability.

SPATIAL CHARACTERISTICS OF HOUSING

The spatial analysis of housing characteristics was conducted by census tract, which usually consists of one square mile in the developed area. Much of the discussion is in terms of poverty clusters and "favored quarters." The availability of affordable housing largely explains the geographic distribution of poverty clusters within the Phoenix metropolitan area. Median rent and median value of owned housing were highly correlated to poverty rates in 1970, 1980 and 1990. Other housing characteristics have been only moderately correlated to poverty rates, including owner occupancy rate, age of housing, type of housing, and vacancy rates.

An extensive cluster of high poverty was centered on downtown Phoenix in 1989. Other smaller clusters of poverty were scattered across the metro area. The Central-South Phoenix cluster included nearly all of the city of Phoenix south of McDowell Road. Between I-17 and 43rd Avenue, the cluster extended north, as far as Bethany Home Road between 27th and 35th Avenues. The cluster also extended north between 7th Street and 32nd Street in an irregular pattern, as far north as Camelback Road between 7th and 16th Streets. The most serious poverty problem was located between the Salt River and McDowell Road west of 32nd Street.

The idea of a "favored quarter" was pioneered by Robert Charles Lesser and Company. The favored quarter of a metropolitan area is that with the greatest presence of executive housing, high-end retail malls, recent highway improvements, employment growth, low commercial real estate vacancy rates, and a high share of regional economic growth. The favored quarter in the Phoenix metro area extends from north Scottsdale to south Tempe.

This discussion focuses on favored *residential* quarters – in essence, the opposite of the poverty clusters. Favored residential quarters (hereafter simply "favored quarters") are defined by low poverty rates, high household incomes and high home values. The primary favored quarter in 1990 was in the northeast quadrant of the metro area. It extended from the area around Squaw Peak and Camelback Mountain to the northeast across much of north Scottsdale. A secondary favored quarter in the southeast quadrant covered much of south Tempe and the Foothills area south of South Mountain. A few smaller areas also showed characteristics of favored quarter status in 1990 – portions of Arrowhead Ranch, Moon Valley, and North Central Avenue.

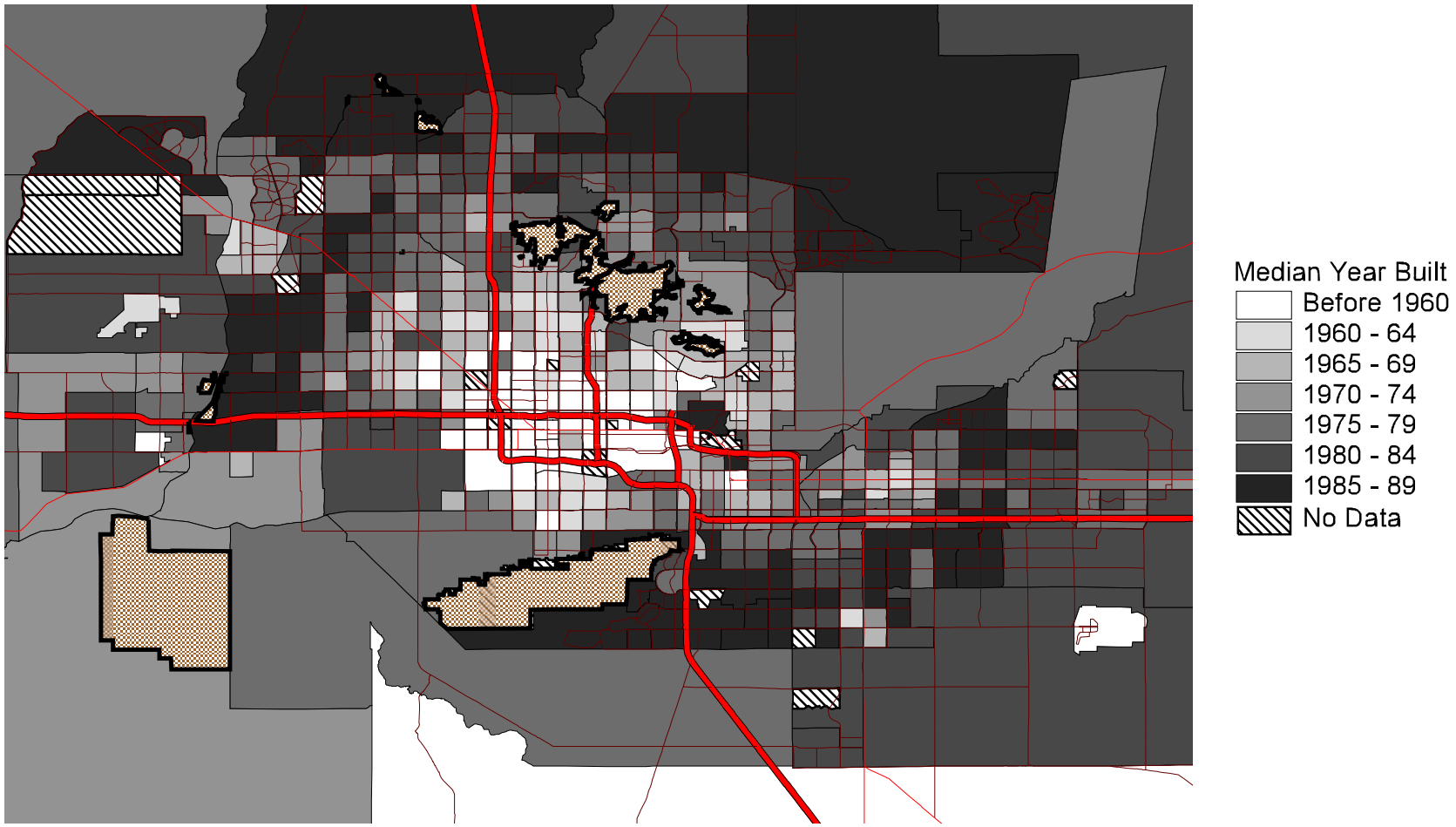
Age

The age of housing in the Phoenix area as of 1990 is displayed in Map 1. From the earliest development in downtown Phoenix, considerable expansion had occurred in all directions except the southwest, which remained largely rural, dotted with heavy industry and older farming communities with high proportions of minorities.

Housing in the primary poverty cluster was among the oldest in the Phoenix area, with the median year built prior to 1960 in most of the area and before 1970 in nearly all of the remainder of the area. Housing in the smaller poverty clusters was not quite as old. In the northeastern favored quarter, the median year built ranged from the 1960s near the Phoenix Mountains to brand new in the far northeast. In the southeastern favored quarter, the median year built as of 1990 was entirely in the 1980s.

The location of the urban fringe, where most of the new housing is being built, can be approximated by the change in population density. In the 1970s, the change was highest from 10 to 13 miles from the center of downtown Phoenix. In the 1980s, the fringe was about 13 to 15 miles from the center. The change in population density between 1990 and 1995 did not clearly indicate the location of the fringe, with the greatest increases from 11 to 17 miles out.

MAP 1
MEDIAN YEAR BUILT IN METROPOLITAN PHOENIX, 1990
Residential Dwellings



Source: Calculated from the U.S. Bureau of the Census, 1990 census.

A study of the locations of residential completions during the 1990s by Gober and Burns placed the fringe at about 17 miles from the center from 1990 through 1992. By 1998, the fringe was 19 to 20 miles from the center, in all directions. Development in the southwest quadrant remained far less than that of the other quadrants, mostly occurring at some distance from the quadrant's previously existing housing.

Type

Single-family houses (including townhouses) accounted for nearly two-thirds of all housing in Maricopa County in 1995. Multifamily dwellings, mostly in buildings of five or more units, made up a little more than one-fourth of the housing stock. Less than 8 percent of the housing consisted of mobile homes and trailers.

In some census tracts, nearly all housing was single-family. This was particularly the case near mountains, at the northeast edge of the primary favored quarter, and in parts of the secondary favored quarter (see Map 2). In addition, single-family housing dominated in most of the urban fringe since multifamily housing generally is not built until the first wave of development has passed. In the Central-South Phoenix poverty cluster, single-family houses made up an average percentage of the total housing stock. Areas of low percentages of single-family houses were scattered, but particularly were found near the Black Canyon and Superstition freeways.

The highest proportions of multifamily housing – more than 50 percent in some tracts – particularly were found in central areas of Tempe, Mesa, Scottsdale, Glendale, and portions of Phoenix between the Black Canyon and Squaw Peak freeways. The major poverty cluster had relatively few large apartment complexes, but relatively more multifamily housing of two-to-four units. In portions of the favored quarter in the northeast, considerable construction of high-rent apartment complexes in the 1980s and 1990s lowered the proportion of single-family housing, but it still remained above average in 1995.

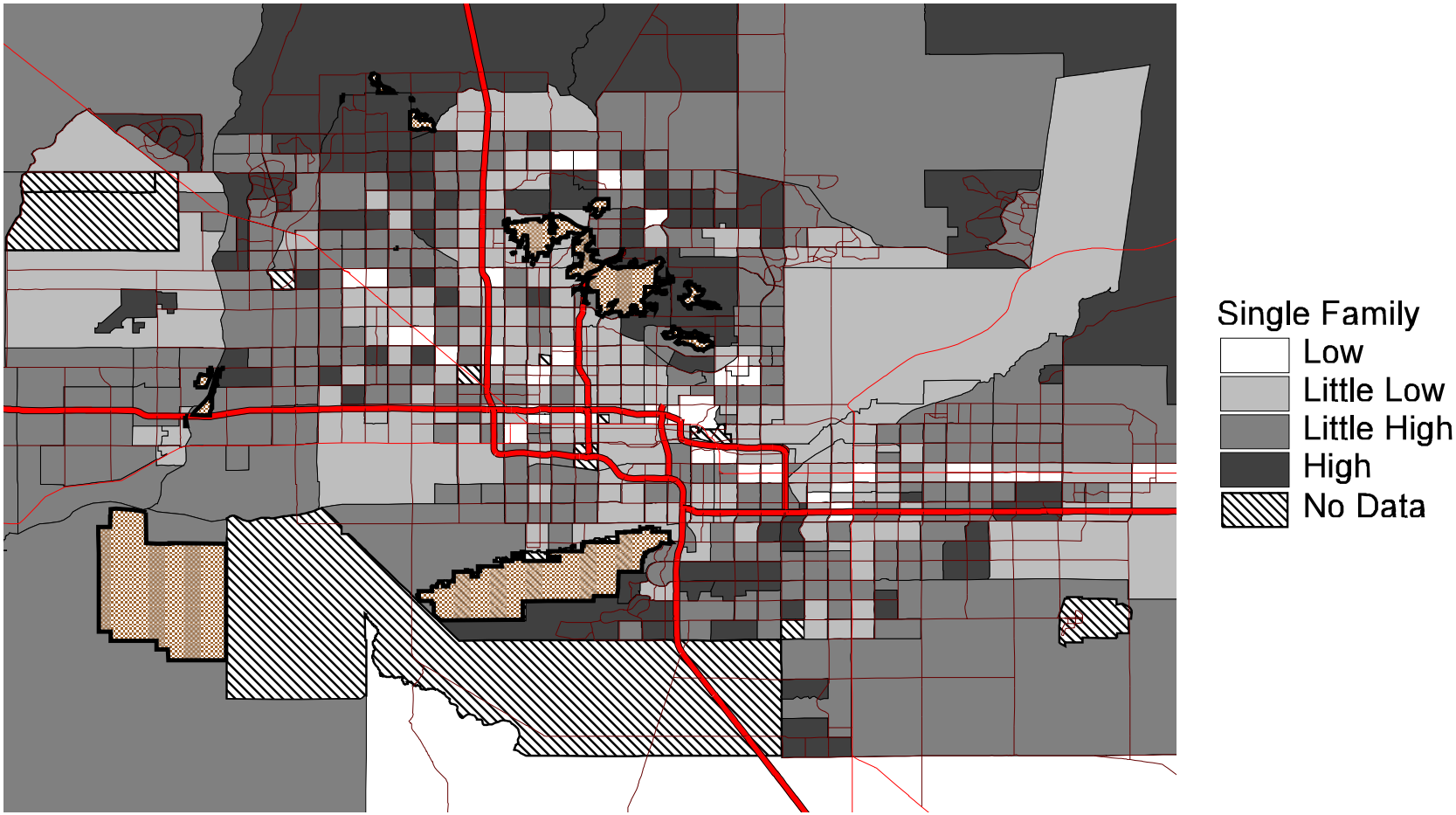
Most of the metro area had no mobile homes or travel trailers. Mobile homes were concentrated in east Mesa, with pockets near and southeast of Sky Harbor Airport, and beyond the urban fringe. More than one-fourth of the housing in these areas consisted of mobile homes and trailers.

Seasonal Housing and Retirement Communities

The preferred location for retirement housing has been well beyond the urban fringe, away from urban problems and where land costs are lower. Originally, retirement housing was clustered in east Mesa and in the Youngtown-Sun City area of the far northwest quadrant. Many retirement communities have opened since 1970, but most have remained close to the original Youngtown-Sun City area in the northwest and in east Mesa. Another cluster developed at the southeast fringe of the Valley. The retirement-age population was a relatively low proportion of the total metro population except in these retirement communities.

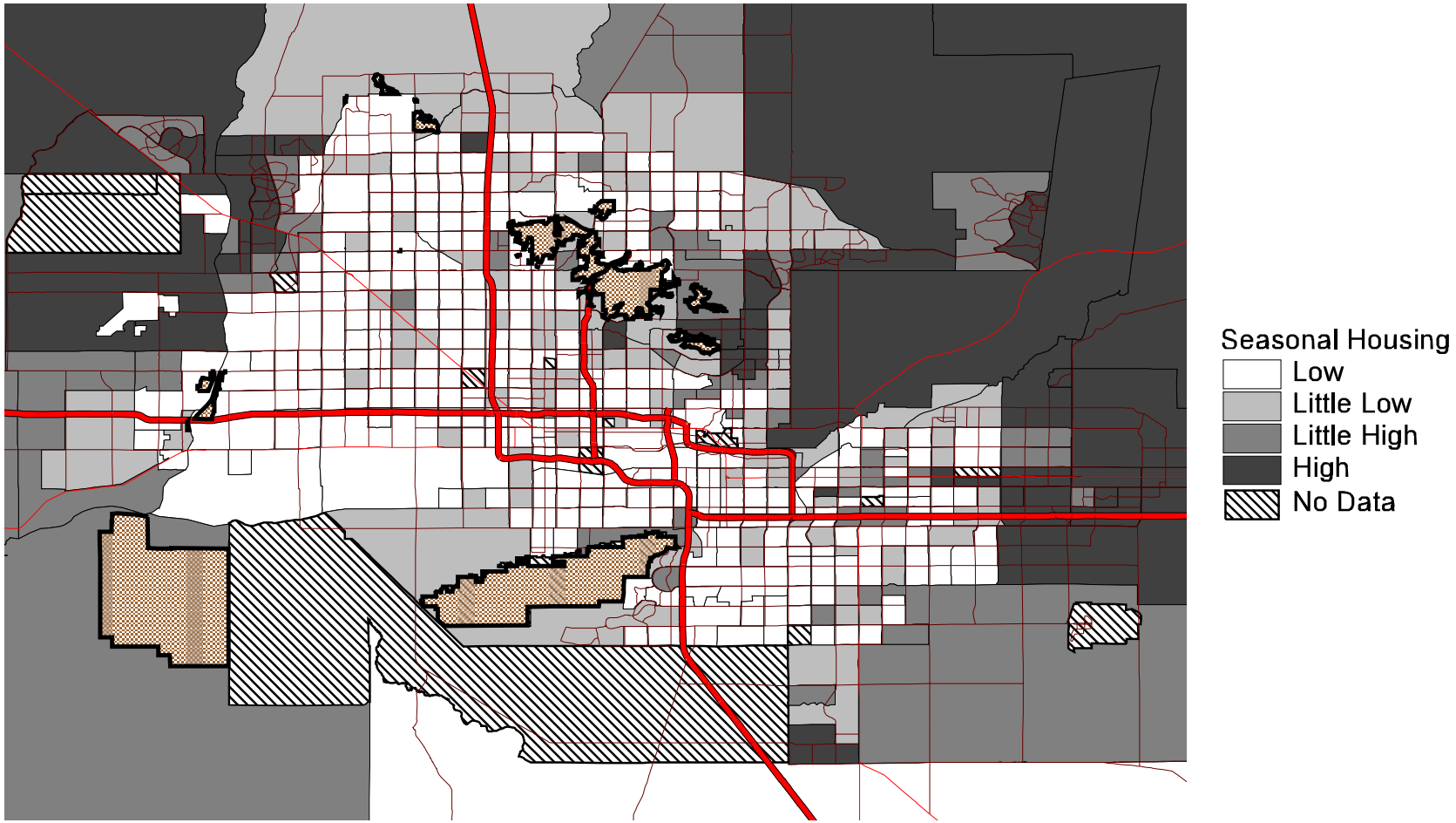
Seasonal housing of a concentration of 10 percent or more of all housing originally was limited to east Mesa and a small area in downtown Scottsdale. Since 1980, however, seasonal housing has become more prevalent in other areas, including retirement communities, along the Indian Bend Wash in Scottsdale, in far northern Scottsdale and Carefree, and in the Biltmore area. Thus, it has become more common in the primary favored quarter (see Map 3). In 1995, nearly 5 percent of all housing in the metro area was held for seasonal use.

MAP 2
SINGLE-FAMILY HOUSING IN METROPOLITAN PHOENIX, 1995
Percentage of Total Housing Units



Source: Calculated from the U.S. Bureau of the Census, 1995 special census.

MAP 3
SEASONAL HOUSING IN METROPOLITAN PHOENIX, 1995
Percentage of Total Housing Units



Source: Calculated from the U.S. Bureau of the Census, 1995 special census.

In general in 1995, the seasonal/retirement housing area in the Northwest Valley consisted mostly of moderate or relatively high-priced single-family houses lived in most of the year, while east Mesa still had a high share of mobile homes and travel trailers, many lived in only during the winter.

Within the northeastern favored quarter, seasonal housing ranged by neighborhood from lower to higher than the metropolitan average. Little seasonal housing existed in the southeastern favored quarter. In the main poverty cluster, little seasonal housing existed, while in the small poverty clusters, the figures were a little higher.

Owner Occupancy and Vacancy Rates

More than 10 percent of Maricopa County's housing units were vacant in 1995, but this figure includes the nearly 5 percent of units that were held for seasonal use. Sixty-five percent of the households owned the unit in which they were living. Related to the economic cycle, owner-occupancy rates rose, and vacancy rates fell, between 1990 and 1995.

In portions of the favored quarter in the northeast, the construction of apartment complexes in the 1980s and 1990s lowered owner-occupancy rates, though they remained above average in 1995. Other portions of the primary favored quarter, as well as the secondary favored quarter in the southeast, had very high owner-occupancy rates. High owner-occupancy of single-family dwellings was not limited to the favored quarter, however, as much of the northern part of the Valley and other fringe areas had high percentages (see Map 4). In the Central-South Phoenix poverty cluster, owner occupancy was average in the area south of the Salt River and in the northwest extension of the cluster, with small increases occurring in the 1990s. The rest of the cluster had a lower than average proportion of owner-occupied housing units.

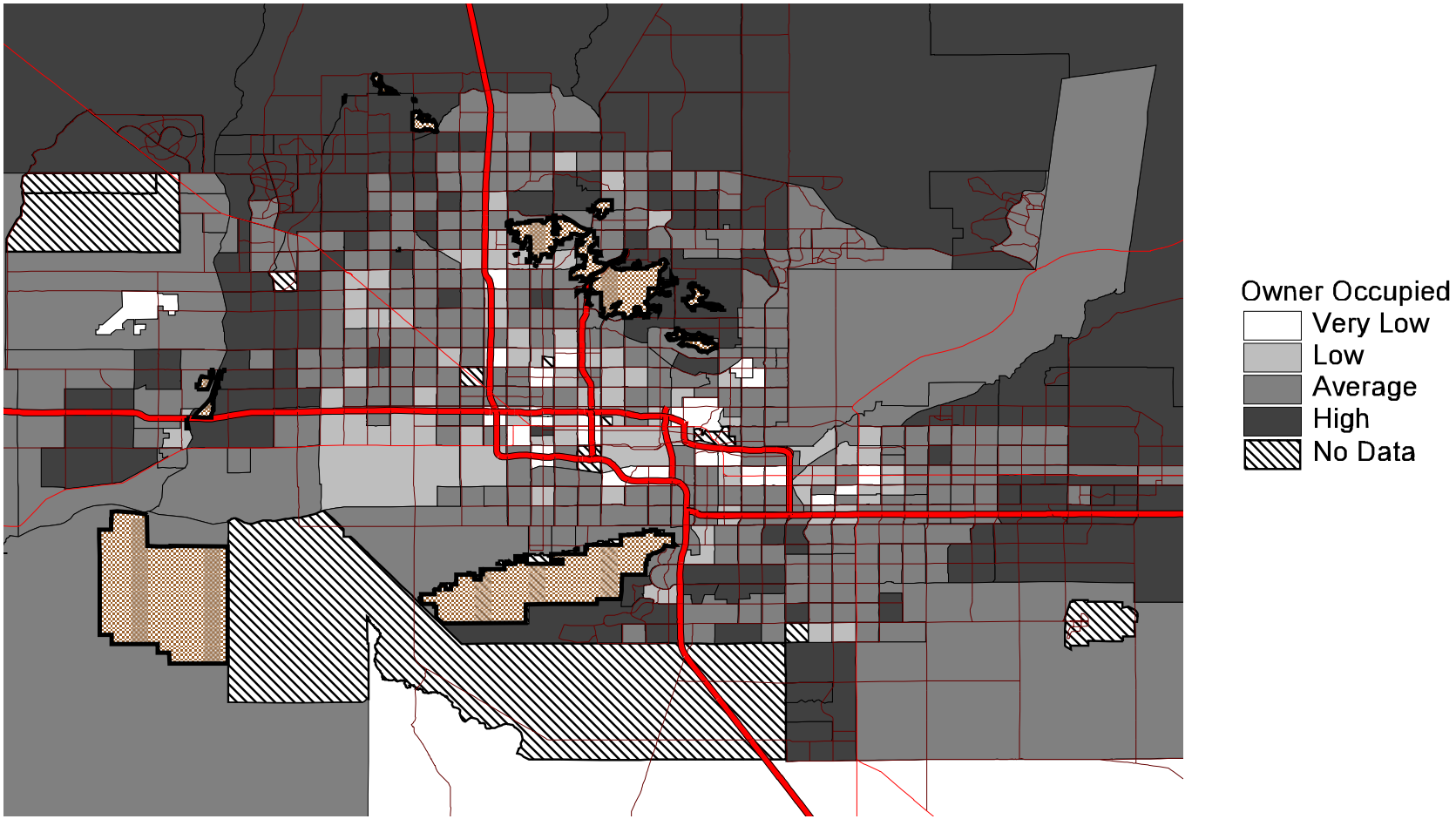
Vacancy rates were highest in areas with high percentages of mobile homes or apartments, and in other areas with considerable rental or seasonal housing. Within the primary poverty cluster in central-south Phoenix, vacancy rates were a little high in most of the cluster, though a little below average south of the river and in the northwest extension. Vacancy rates were low in the favored quarter.

Rents and Home Values

The value of owned housing was highest in metro Phoenix in 1990 primarily in what has been defined as the favored quarters. Compared to the county's median value of $84,300, most of the primary favored quarter had values at least twice as high. Values in the secondary and other favored quarters were not as high, with part of north Mesa having values approaching these. In contrast, median values in the Central-South Phoenix poverty cluster and many of the smaller poverty clusters were less than $50,000 (see Map 5).

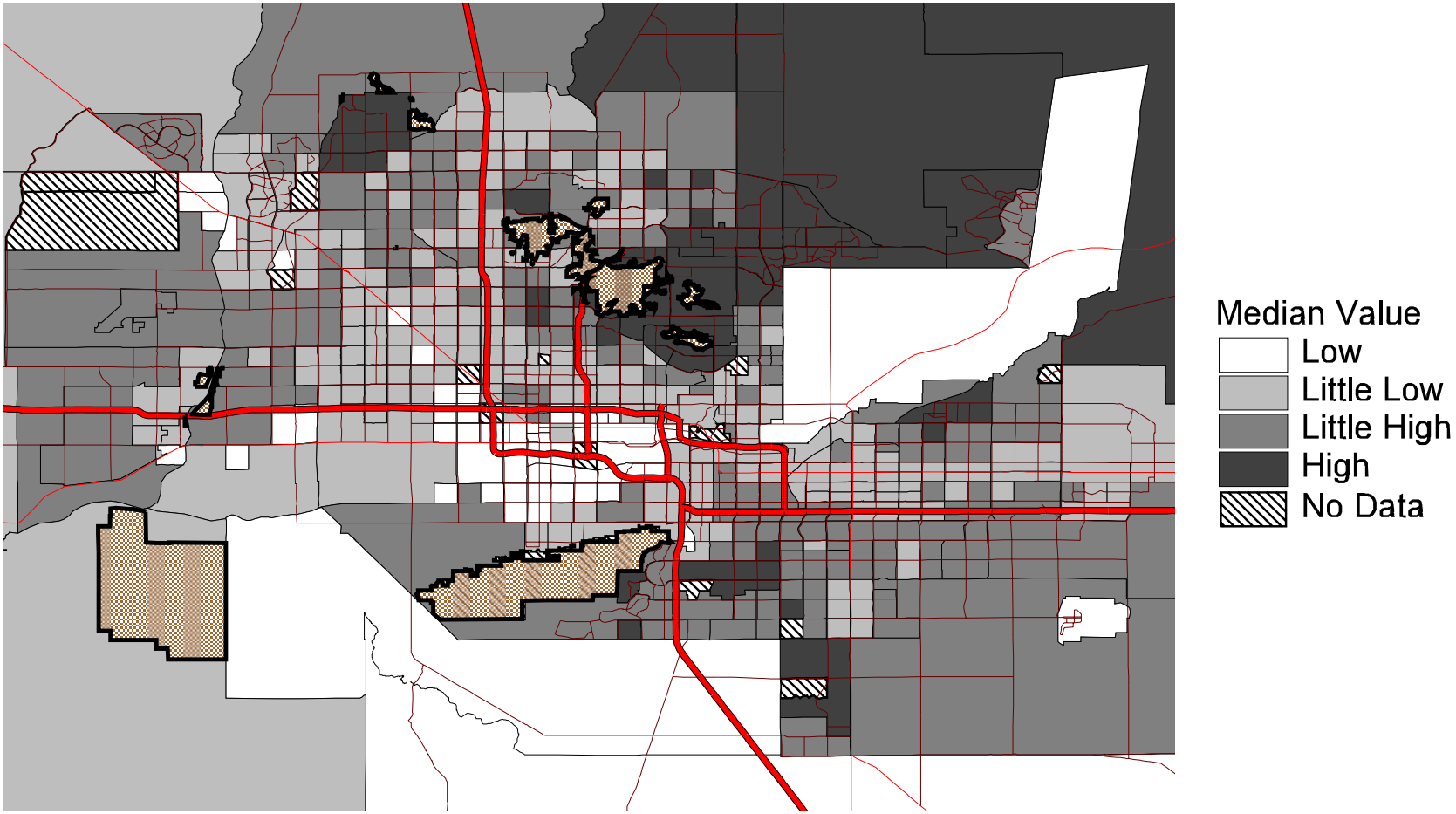
The amount paid in rent largely corresponded to the geographic pattern of house values. However, rents also were high across much of the northern part of the Valley, including the Sun City area, and in much of the Southeast Valley (see Map 6).

MAP 4
OWNER-OCCUPANCY RATE IN METROPOLITAN PHOENIX, 1995
Percentage of Total Housing Units



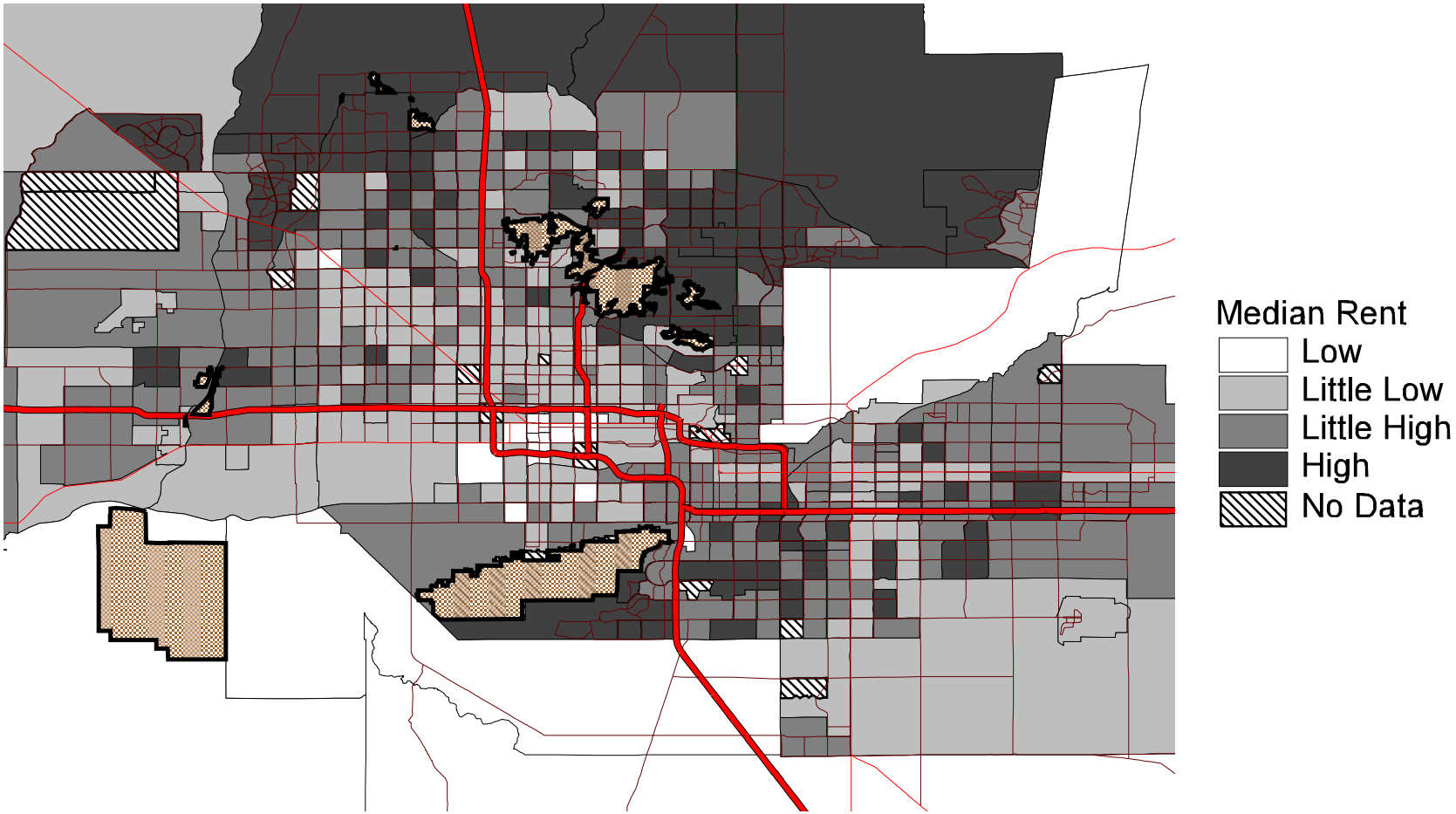
Source: Calculated from the U.S. Bureau of the Census, 1995 special census.

MAP 5
MEDIAN HOUSING VALUE IN METROPOLITAN PHOENIX, 1990
Owner-Occupied Housing Units



Source: Calculated from the U.S. Bureau of the Census, 1990 census.

MAP 6
MEDIAN RENT PAID IN METROPOLITAN PHOENIX, 1990
Renter-Occupied Housing Units



Source: Calculated from the U.S. Bureau of the Census, 1990 census.

HOUSE SIZE

The average house size steadily climbed from 1945 through 1969, rising nearly 500 square feet. It fluctuated during the 1970s and early 1980s at a little less than in the late 1960s (see Table 1), a result of high interest rates and demand for starter housing by the large baby-boom generation. From the mid-1980s through the early 1990s, the average size surged some 450 square feet. The baby-boom generation was trading up from their starter homes during a period of lower interest rates.

TABLE 1
AVERAGE HOUSE SIZE IN MARICOPA COUNTY

Year Built	Average House Size in Square Feet
Prior to 1945	1,050
1945-49	1,090
1950-54	1,220
1955-59	1,360
1960-64	1,380
1965-69	1,540
1970-74	1,420
1975-79	1,500
1980-84	1,440
1985-89	1,650
1990-94	1,900
1995-98	1,850

Source: Calculated from data provided by Marketron, a Phoenix-based company.

HOUSING AFFORDABILITY

An inadequate supply of very low-cost housing existed in the Phoenix metropolitan area in 1990. Even if low-income households were perfectly matched to low-income housing that they could afford, a little less than 3 percent of all households (about 23,000) could not have found affordable housing.

The inadequacy expanded in the 1980s. In 1980, not quite 2 percent of households would have been unable to find affordable housing.

The percentage of households reporting an unaffordable housing payment was much greater. Thirty-two percent of households in 1990 had a "housing problem" by reporting that they spent more than the generally accepted affordable limit of 30 percent of gross income on housing costs. However, some high-income households who chose to stretch their housing payments are included among this percentage. Considering only low-income households who spent more than 30 percent of their income on housing, about 21 percent of all households had a housing problem related to affordability.

Affordability problems are greater among renters than homeowners. In 1990, 44 percent of renters and 24 percent of homeowners reported spending more than 30 percent of their income on housing.

Renter affordability improved a little in the 1980s following a large decline in the 1970s. Compared to 37 percent in 1970, 45 percent of renters in 1980 and 44 percent in 1990 had a housing problem.

In contrast, homeowners experienced a decrease in affordability in the 1980s. The percentage paying more than 30 percent of income for housing rose to 24 percent from 19 percent in 1980.

Efforts by the Arizona Housing Commission to update affordability indexes based on decennial census figures are reviewed first. Their use of data defined quite differently from census data amounts to a comparison of "apples and oranges." Alternative measures of affordability are then presented.

Arizona Housing Commission Report

In November 1999, the report "The State of Housing in Arizona" was produced by the Arizona Department of Commerce's Office of Housing and Infrastructure Development for the Arizona Housing Commission. Data from a variety of sources are presented, with many inconsistencies between sources or over time.

A prime example of both data problems and bias is the presentation of the homeownership rate by year, with Arizona compared to the national average. On page 23 of the Commission's report, the national rate is shown during the 1990s to have gradually climbed from about 64 to 66 percent. In contrast, the Arizona figure was a little higher than the national average in 1990 (though superior data from the decennial census shows the rates to be identical at 64.2 percent). According to the chart, Arizona homeownership rates rose to near 70 percent in the early 1990s, fell to 62 percent in 1996, then rose a little but remained below 65 percent in 1998. The report notes the decline as "particularly troubling" and infers this is the result of substantial increases in home prices that led to declining affordability. An interesting inference since on page 33 the report shows homeowner affordability in 1998 to be higher than in 1990! Further, the analysis ignores that the 1998 figure for Arizona is the same as in 1990 and only two percentage points below the 1998 national average.

These two percentage points are about the same as the survey error. The source of the data is the Current Population Survey, conducted by the U.S. Bureau of the Census, which was designed to be accurate only for the nation and four regions of the country. The margin of error in Arizona is +/- 1.6 percentage points with 95 percent confidence. That is, the 64.3 percent estimate for 1998 is within a confidence interval of 62.7 to 65.9 (a 1 in 20 chance exists that the actual homeownership percentage is not in this interval). With the national figure's confidence interval for 1998 ranging from 66.1 to 66.5 percent, it cannot be said that a significant difference existed in 1998 between the Arizona and U.S. figures. (In 1999, Arizona's figure was up to 66.3 percent, compared to the national average of 66.8 percent.) Thus, the proper conclusion is that Arizona's performance in the 1990s was essentially identical to the national average. The higher figures in the early 1990s and the lower figures in the mid-1990s likely resulted from survey error.

The rest of this section focuses on the affordability measures included in the report, which are for Arizona, *not* Metropolitan Phoenix.

Homeowner Affordability

A glance at the affordability chart (Chart 33 on page 24 of the Commission's report) shows that fluctuations in interest rates have the largest impact on homeowner affordability. The chart applies primarily to first-time buyers, since the assumed down payment is only 5 percent. For existing homeowners who sell their current home and buy another, affordability is better than that shown. The chart is limited to single-family dwellings, downwardly biasing the affordability measure since townhouses and condominiums are on average less expensive. With no reliable source of up-to-date household income data, income for 1998 and 1999 are estimated. The estimates appear to be reasonable.

The major problem with the chart is that the 1998/99 median home value estimates are inconsistent with the 1970, 1980 and 1990 figures, which come from the decennial censuses and are the median home values reported for *all* owner-occupied dwellings. The 1998/99 estimates are the median sales price of homes sold each year – a fraction (e.g. 11 percent in 1998) of all owner-occupied dwellings. Moreover, this fraction is biased because new dwellings, which on average are larger with more amenities – thus more expensive – than older houses, make up one-third of the annual sales.

In 1998, for example, new homes accounted for 34 percent of all single-family sales, but only about 4 percent of the total single-family housing stock. If the median sales price of new homes is properly weighted at 4 percent rather than 34 percent, then the median sales price is $107,700 instead of $115,000. This figure can be used as a proxy for the median value of all homes if it is assumed that the median resale home price fairly represents the value of all existing homes (a reasonable assumption based on 1990 comparisons, but not necessarily accurate in 1998). Using the $107,700 figure, the affordability index is 50 percent instead of the 46 percent shown in the Commission's report. Thus, the median-income family could afford the median-priced home.

In comparison, the Arizona Real Estate Center's affordability index is much higher, due mostly to an assumption of a 15 percent rather than 5 percent down payment. The Center also uses a different estimate of income. This index is set equal to 100, rather than 50 as discussed in the preceding paragraph, when the median-income household can afford the median-priced home. Based on homes sold in each year, the affordability of resale homes rose from 105 in 1990 to 130 in 1998; new home affordability jumped from 76 to 106. (The median-income household

could afford to purchase a home priced 6 percent more than the median-priced new home in 1998.)

In the late 1990s, homeowner affordability was higher than in 1980 or 1990, but less than in 1970. During the 1970s, the median home value soared an inflation-adjusted 77 percent. This large increase occurred nationwide and initially resulted from the increase in two-income households, who bid up home prices because they could afford the higher payments. High inflation rates then contributed to further increases in house prices, as housing purchases were accelerated before prices and interest rates climbed higher. In addition, housing was viewed as an investment rather than a place to live. Thus, for purposes of housing affordability, 1970 is not a good base period. Any analysis will show affordability lower currently than in 1970, when all of the depreciation occurred more than 20 years ago.

Renter Affordability

As with homeowner affordability, the major problem with the renter affordability chart on page 28 of the Commission's report is that the 1998 median rent estimate is inconsistent with the 1970, 1980 and 1990 figures, which come from the decennial censuses and are the median rent for *all* renter-occupied dwellings. Less than one-half of all rental units in 1990 were in buildings with at least five units (the norm for apartment complexes). However, the Commission's 1998 estimate was derived almost entirely from surveys of large apartment complexes. For example, the survey by RealData Inc. is limited to apartment complexes of more than 100 units. RealData's 1990 figure for Maricopa County was 7 percent higher than the median rent from the census.

The statewide increase in median rent from 1990 to 1998 shown in Chart 41 on page 28 of the Commission's report is 53 percent. However, the 1990 to 1998 increase in rent according to RealData was 47 percent in Maricopa County and 35 percent in Pima County. As with owner-occupied dwellings, new rental units built in the 1990s were larger with more amenities than the existing stock of rental units. Thus, these new units were more expensive and caused an inappropriately large increase in the median rent.

The entry of new units into the market did not bias the rental component of the Metropolitan Phoenix Consumer Price Index. Thus, the ASU Center for Business Research calculated a much lesser increase in rents of 34 percent from 1990 to 1998, based on its ongoing survey of apartment units (mostly of large complexes). Using this increase in Chart 41 puts the median rent in 1998 at $495, which a household earning $23,240 could afford. Sixty-six percent of households earned this much, compared to 62 percent as estimated in Chart 41. However, it is not valid to compare even this figure to the census figures for 1970, 1980 and 1990. Thus, the change in rental affordability during the 1990s cannot be quantified.

Alternative Measures of Affordability

The affordability measures discussed above focus on households earning the median income. The mid-point of the distribution, however, may not be an accurate indicator of the situation at the low end of the income range. It is this low end that is important from a policy perspective in providing adequate supplies of affordable housing. An example of the low end not being consistent with the median occurs in Tempe. In both 1980 and 1990, median household income in Tempe was above the metro figure, but the poverty rate also was higher than average.

In Metropolitan Phoenix, most of the lower-income households and low-cost housing is in Central and South Phoenix. Large apartment complexes are not common in this area, with

most rentals being of small, older single-family homes, mobile homes, and multifamily units of two-to-four dwellings. Thus, the median rent based on large apartment units is a particularly poor measure of affordable housing of low-income households.

Using decennial census data *for Maricopa County*, two alternative measures of affordability were constructed, each with a focus on low-income households. Like the affordability measures discussed in the Commission's report, the drawback of these measures is that they cannot be updated since the last census.

In the first measure, perfect spatial distribution is assumed between low-income households and the most affordable housing. Detailed 1980 and 1990 census data (complete 1970 data are unavailable) on the distribution of household income, gross rent, and homeowner costs were used. Using the accepted maximum of 30 percent of gross income going to housing costs (including utilities), the mismatch was just less than 2 percent in 1980 between low-income households and low-cost housing. (At the lowest end of the income range, about 2 percent of households could not find affordable housing even under perfect conditions.) This percentage climbed to a little less than 3 percent in 1990. Thus, very low-income households increased more rapidly in the 1980s than did very low-cost housing.

The second measure removes the assumption of perfect distribution, looking at the percentage of income actually spent on housing. This measure can be expressed two ways: (1) the median percent of income spent on housing and (2) the percentage of households paying more than 30 percent (the preferred method). The results are shown in Table 2.

Affordability problems are greater among renters than homeowners. A large decline in affordability occurred in the 1970s, as rental rents as well as purchase prices jumped. Renter affordability improved a little in the 1980s. In contrast, homeowners experienced a decrease in affordability in the 1980s.

TABLE 2
HOUSING AFFORDABILITY, MARICOPA COUNTY

	Percentage of Households Spending More than 30% of Gross Income on Housing Costs	Median Percentage Spent
Renters:		
1970	36.8	23.3
1980	45.0	28.3
1990	43.6	27.5
Homeowners:		
1980	19.0	<20 *
1990	24.3	20.9
Combined:		
1980	28.3	20.9
1990	32.0	23.3

* A precise figure cannot be calculated since the lowest category in the census was less than 20 percent.

Source: Calculated from the U.S. Bureau of the Census, 1970 to 1990 decennial censuses.

This second measure overstates the affordability problem because some households *choose* to stretch their housing payment beyond 30 percent of gross income. For example, of the 32 percent of households paying more than 30 percent of income on housing costs in 1998, 4 percent occurred in households earning at least 27 percent more than the median. If limited only to low-income households (those earning less than 73 percent of the median income), 21 percent of households had a housing problem related to affordability.

The Commission's report includes an estimate of the percentage of *Arizona* households paying more than 30 percent of income in housing costs in 1999 (Chart 46 on page 31). The estimate of median income used in this chart is highly derived, has a wide margin of error of at least +/- 6 percent, and uses family rather than household income. Thus, it is not comparable to census figures.

The change in affordability by the various measures is summarized in Table 3.

TABLE 3
SUMMARY OF AFFORDABILITY MEASURES
BASED ON VARYING INCOME ASSUMPTIONS

	Median Income	Low Income: Perfect Spatial Match	Low Income: No Spatial Match
1970-80:			
Homeowners	Down Considerably	NA	NA
Renters	Down	NA	Down
Total	NA	NA	NA
1980-90:			
Homeowners	Up	NA	Down
Renters	Slightly Up	NA	Slightly Up
Total	NA	Down	Down
1990-2000:			
Homeowners	Up	NA	NA
Renters	NA	NA	NA
Total	NA	NA	NA

NA: Data not available to make this calculation.

Source: Calculated from the U.S. Bureau of the Census, 1970 to 1990 decennial census data, and "The State of Housing in Arizona," Arizona Housing Commission.

REFERENCES

Arizona Department of Commerce, Office of Housing and Infrastructure Development, "The State of Housing in Arizona," November 1999, produced for the Arizona Housing Commission.

Gober, Patricia and Elizabeth Burns. (1999) "Using GIS to Monitor Annual Changes in the Size and Shape of Phoenix's Urban Fringe."